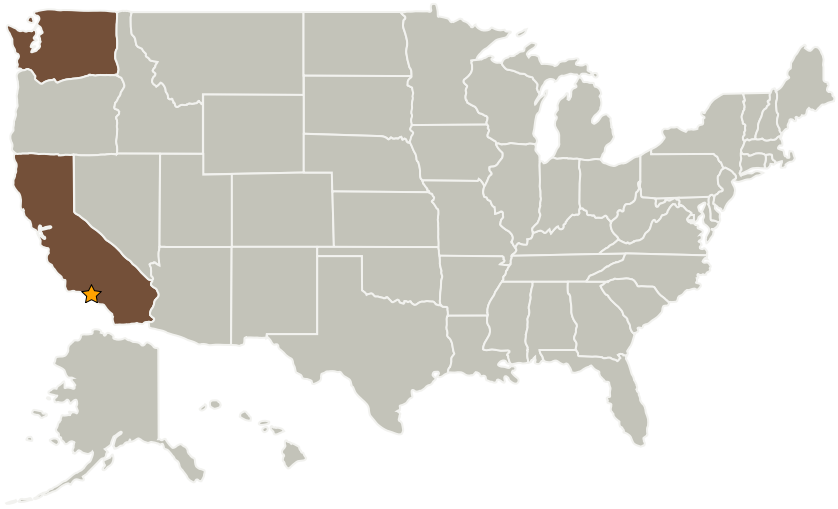
Micro Pulsed Inductive Thruster with Solid Fuel Option (uPIT_SF), Phase I

Completed Technology Project (2009 - 2009)

Project Introduction

The Micro Pulsed Inductive Thruster with Solid Fuel Option (µPIT_SF) is a high-precision impulse bit electromagnetic plasma micro-thruster. The µPIT prototype is a small (< 230 g) thruster that produces and accelerates plasma. In the solid fuel mode, µPIT_SF is able to substantially extend the performance of standard PPT systems by ionization and heating of the high density neutral gas produced after the arc. A small power-processing unit (PPU) is attached directly to the thruster which isolates the high voltage igniter section from the main spacecraft bus. Further development of the µPIT has implications that could include dramatic weight reductions of onboard station keeping and attitude control systems for miniature spacecraft and increased thruster efficiencies. Anticipated development of the µPIT in Phase 1 of the proposed work would lead to a 2nd generation prototype at or near the NASA TRL 5. Anticipated results from a Phase 2 program would be to produce a prototype at NASA TRL 6 with a corresponding experimental determination of the thruster's Isp levels and operational characteristics including a thrust measurement.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Jet Propulsion Laboratory (JPL)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Jet Propulsion Laboratory(JPL)	Lead Organization	NASA Center	Pasadena, California
Eagle Harbor Technologies, Inc.	Supporting Organization	Industry Veteran-Owned Small Business (VOSB)	Seattle, Washington

Primary U.S. Work Locations	
California	Washington

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX01 Propulsion Systems
  - TX01.2 Electric Space Propulsion
    - TX01.2.3 Electromagnetic